

SKiM[®] 5

Trench IGBT modules

SKiM455GD12T4D1

Features

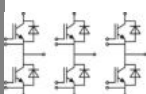
- IGBT 4 = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications*

- High Reliability AC inverter drives
- UPS

Remarks

- Case temperature limited to $T_c = 125^\circ\text{C}$ max
- $T_{j,max}$ of the diode is limited to 150°C

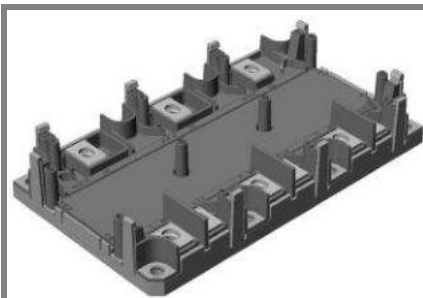


GD

Absolute Maximum Ratings			T _c = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = °C		1200	V
I _C	T _j = 150 °C	T _{heatsink} = 25 °C	400	A
		T _{heatsink} = 70 °C	305	A
I _{CRM}	I _{CRM} = 3xI _{CNOM}		1350	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 800 V; V _{GE} ≤ 15 V; T _j = 150 °C V _{CES} < 1200 V		10	µs
Inverse Diode				
I _F	T _j = 150 °C	T _{heatsink} = 25 °C	295	A
		T _{heatsink} = 70 °C	215	A
I _{FRM}	I _{FRM} = 2 x I _{FNOM}		600	A
Module				
I _{t(RMS)}				A
T _{vj}			-40 ... +150	°C
T _{stg}			-40 ... +125	°C
V _{isol}	AC, 1 min.		2500	V

Characteristics			T _c = 25 °C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 18 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C				5	mA
V _{CE0}	T _j = 25 °C			0,8	0,9	V
	T _j = 125 °C			0,7	0,8	V
r _{CE}	V _{GE} = 15 V T _j = 25°C			2,2	2,4	mΩ
	T _j = 125°C			3,1	3,3	mΩ
V _{CE(sat)}	I _{Cnom} = 450 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}			1,8	2	V
	T _j = 125°C _{chiplev.}			2,1	2,3	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			27,9		nF
C _{oes}				1,7		nF
C _{res}				1,5		nF
Q _G	V _{GE} = -8V/+15V			2600		nC
R _{Gint}	T _j = 25 °C			1,7		Ω
t _{d(on)}	R _{Gon} = 1 Ω di/dt = 8200 A/μs	V _{CC} = 600V I _C = 450A T _j = 125 °C V _{GE} = ± 15V		265		ns
t _r				60		ns
E _{on}				34		mJ
t _{d(off)}	R _{Goff} = 1 Ω di/dt = 5300 A/μs	T _j = 125 °C V _{GE} = ± 15V		470		ns
t _f				65		ns
E _{off}				40		mJ
R _{th(j-s)}	per IGBT			0,14		K/W

SKiM455GD12T4D1



SKiM[®] 5

Trench IGBT modules

SKiM455GD12T4D1

Features

- IGBT 4 = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

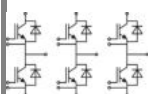
Typical Applications*

- High Reliability AC inverter drives
- UPS

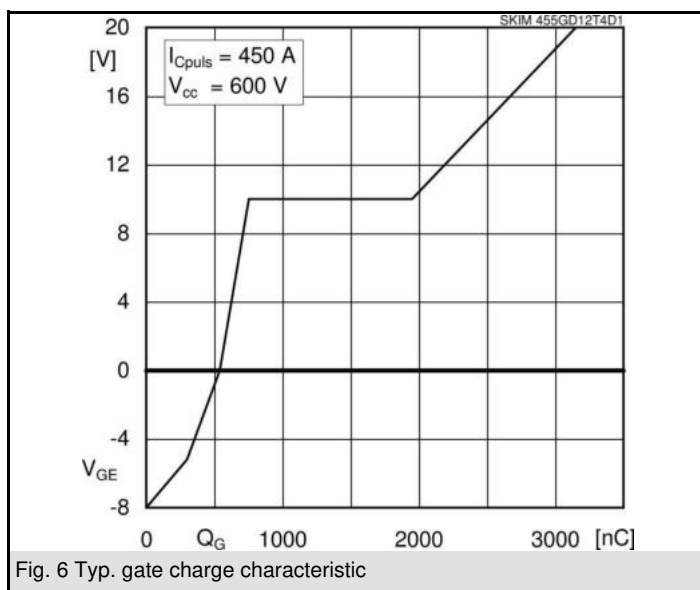
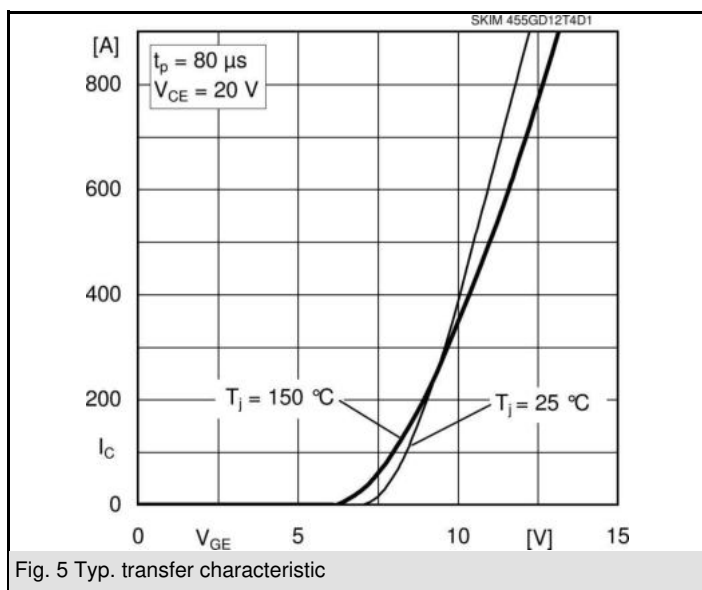
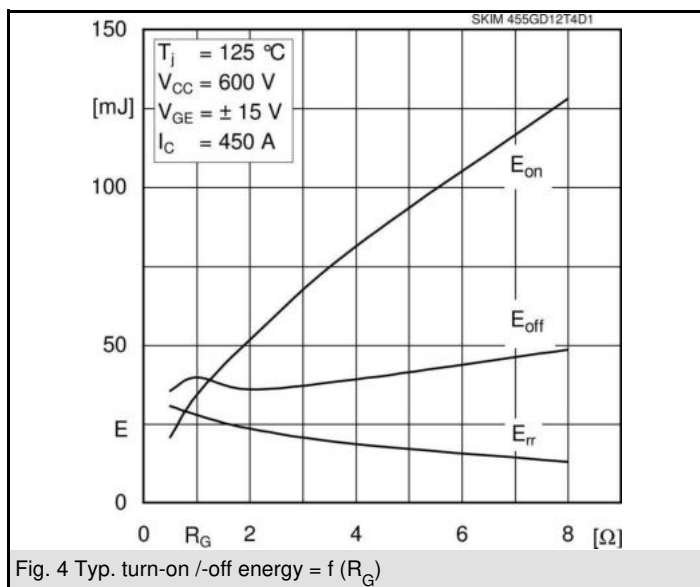
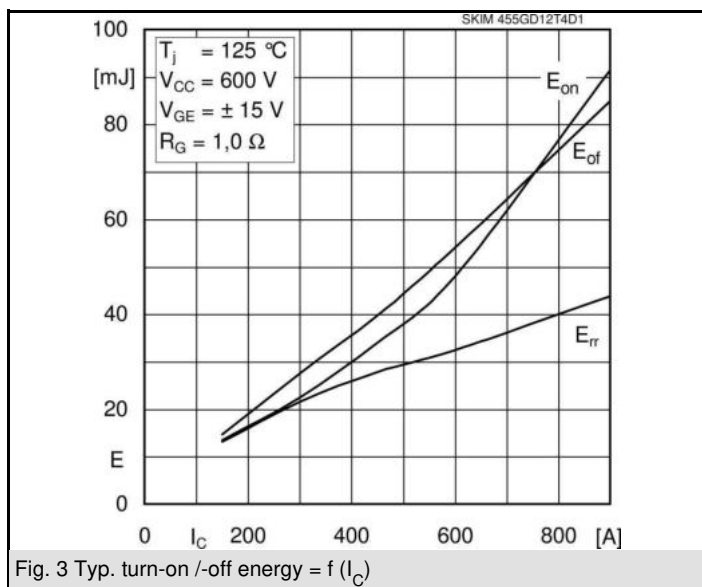
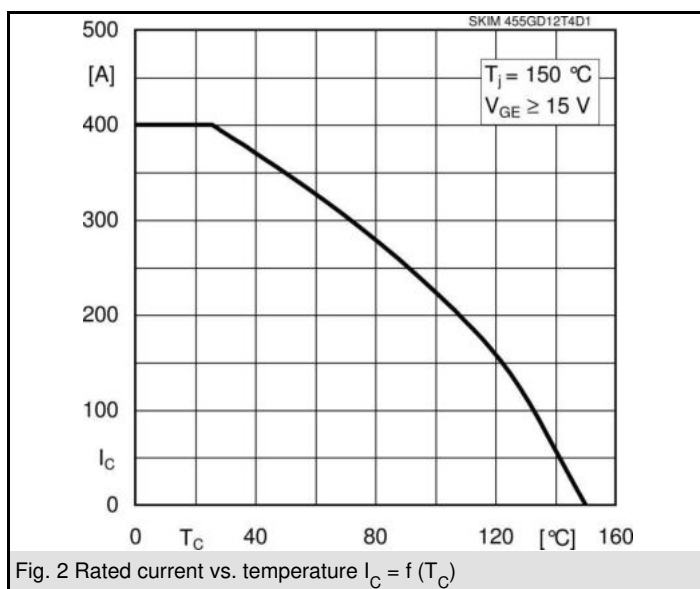
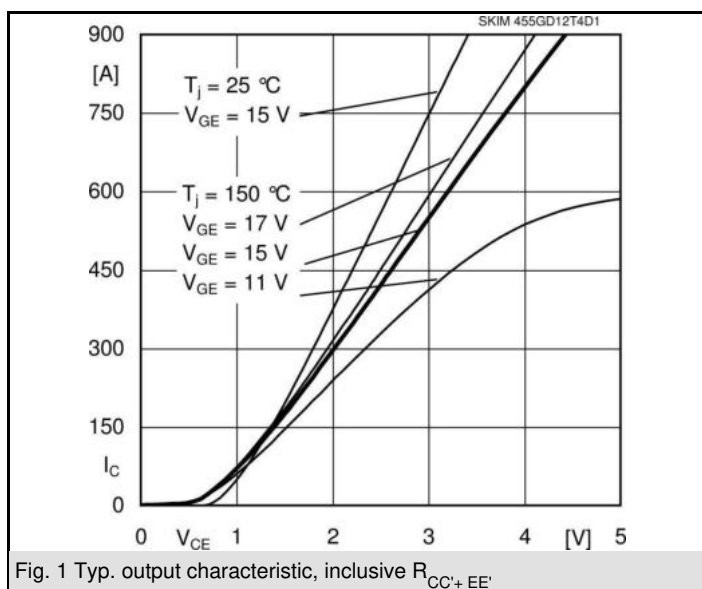
Remarks

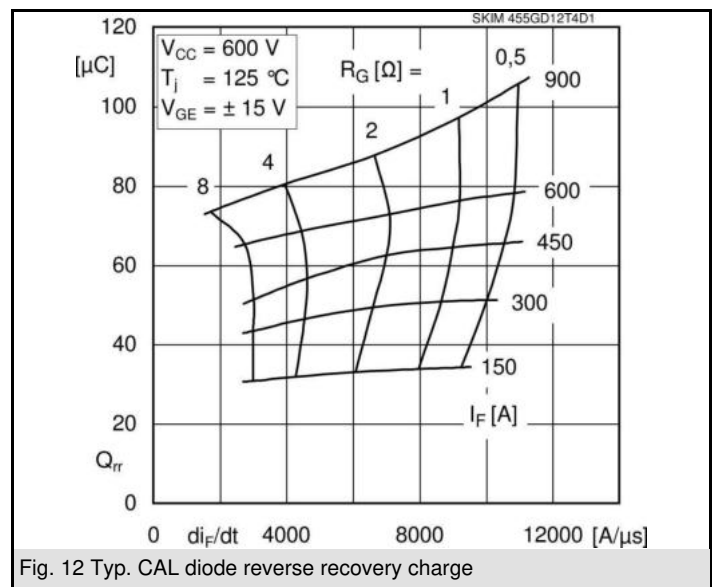
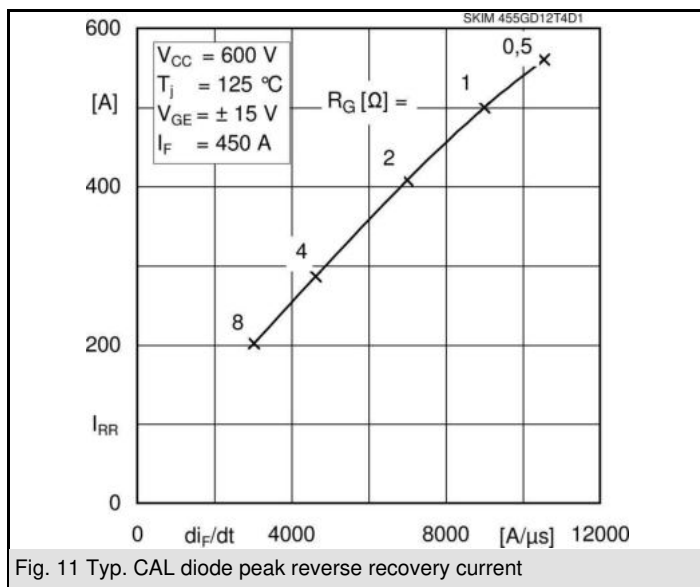
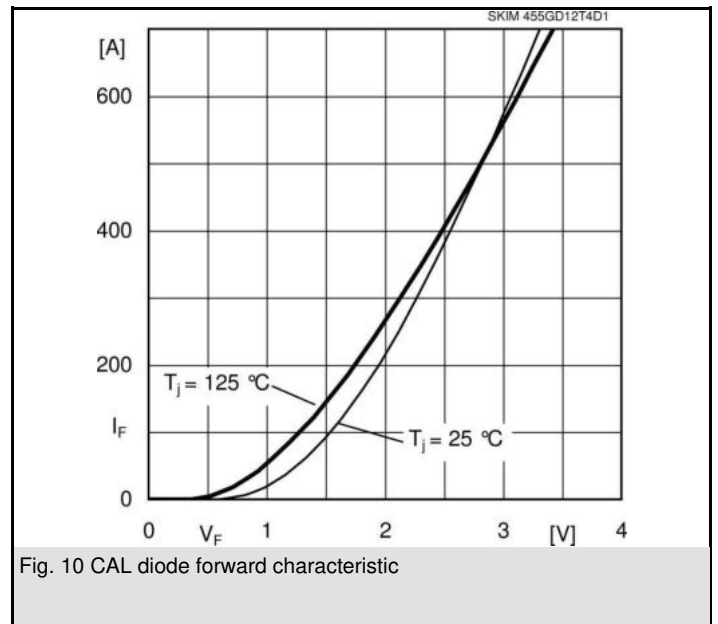
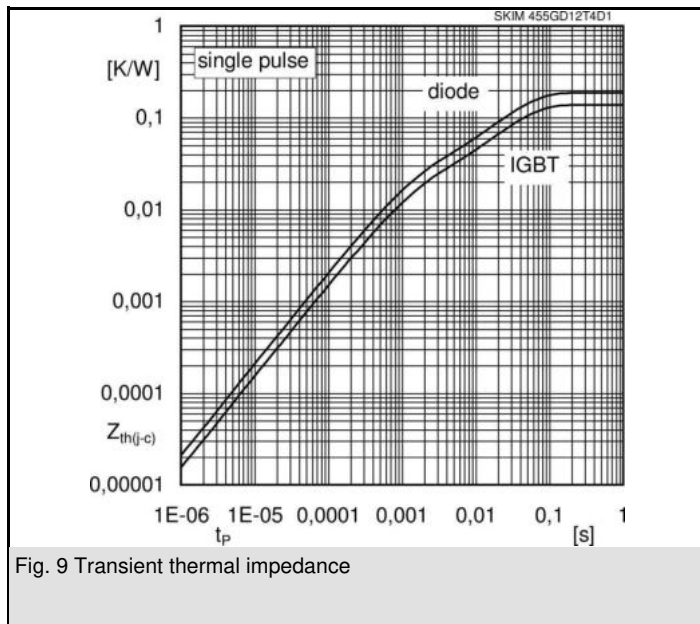
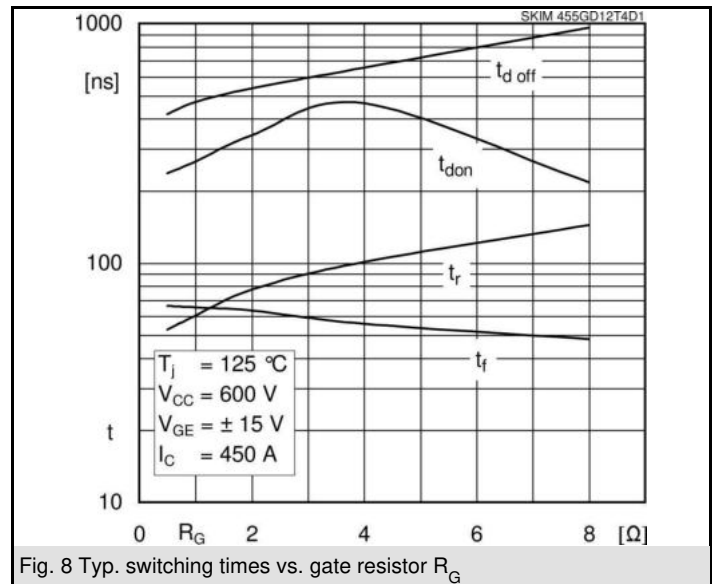
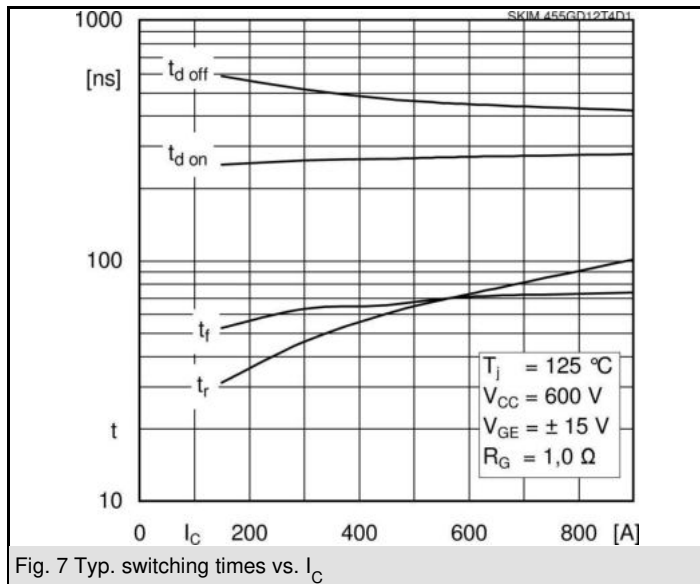
- Case temperature limited to $T_c = 125^\circ\text{C}$ max
- $T_{j,max}$ of the diode is limited to 150°C

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 450\text{ A}; V_{GE} = 0\text{ V}$				
	$T_j = 25^\circ\text{C}_{chiplev.}$		2,3	2,8	V
	$T_j = 125^\circ\text{C}_{chiplev.}$		2,2	2,7	V
V_{F0}					
	$T_j = 25^\circ\text{C}$		1,2	1,6	V
	$T_j = 125^\circ\text{C}$		0,9	1,3	V
r_F					
	$T_j = 25^\circ\text{C}$		2,3	2,7	mΩ
	$T_j = 125^\circ\text{C}$		2,8	3,1	mΩ
I_{RRM}	$I_F = 450\text{ A}$		500		A
Q_{rr}	$di/dt = 9000\text{ A}/\mu\text{s}$		64,5		μC
E_{rr}	$V_{GE} = -15\text{ V}$		27,8		mJ
$R_{th(j-s)}$	per diode		0,19		K/W
Module					
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip				
	$T_{case} = 25^\circ\text{C}$		0,9		mΩ
	$T_{case} = 125^\circ\text{C}$		1,1		mΩ
M_s	to heat sink M5				Nm
M_t	to terminals M6	4		5	Nm
w				460	g
Temperature sensor					
R_{TS}	$T = 25\text{ (100)}^\circ\text{C}$		1 (1,67)		kΩ
Tolerance	$T = 25\text{ (100)}^\circ\text{C}$		3 (2)		%

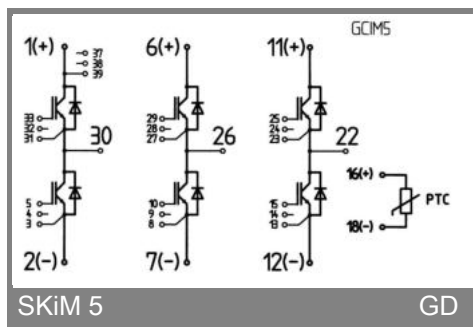


GD





no. E 63 532



© by SEMIKRON